protein fused with a gene for the target protein, the fusion between the gene for the fluorescent protein and the gene for the target protein being such that the properties of the target protein are not modified by the presence of the fluorescent protein, wherein the interaction between the target protein, in particular the receptor, and the ligand is not modified, and wherein a response transduction function is not modified, the fluorescent protein being chosen from the fluorescent proteins obtained or derived from autofluorescent proteins of cnidarians, the molar extinction coefficient of which is greater than about 14,000 $M^{-1}cm^{-1}$ and the quantic fluorescence yield is greater than about 0.38, this protein being further chosen from green fluorescent protein (GFP), variants of GFP that conserve the fluorescence property, and fragments of GFP and said variants that conserve the fluorescence property,

- said cells or said cell fragments are placed in contact with a ligand for said target protein, labeled with a label comprising a molecule capable of absorbing the light emitted by the fluorescent protein, or a fluorescent substance, the fluorescent protein being the fluorescence energy donor and the label being the fluorescence energy acceptor, or the fluorescent protein being the fluorescence energy acceptor and the label being a fluorescent substance which is a fluorescence energy donor, and

- irradiation is carried out at a wavelength which makes it possible either to excite the fluorescent protein or to excite the fluorescent substance,

- it being possible for the above-mentioned steps of placing in contact and irradiation to be carried out either simultaneously or one after the other, or

- said cells or said cell fragments are placed in contact with a ligand for the above-mentioned protein, labeled with a label, the cells or the ligand having been irradiated before being placed in contact,

- wherein a reduction in the amplitude of the donor's emission and/or emission signal characteristic of the acceptor's emission is detected.--

Cancel claim 11 without prejudice.

Amend claim 14 as follows:

--14. (twice amended) Process according to Claim 10, in which the protein whose protein-ligand interaction it is desired to determine is chosen from:

- membrane-bound proteins coupled to the G protein,

- growth factor receptors which are structurally linked to the insulin receptor,

- ion channel-receptors,

- intracellular nuclear receptors which are structurally linked to the steroid receptor.--

Amend claim 32 as follows:

--32. (amended) Kit or equipment for detecting and quantifying non-covalent interactions between a target protein

labeled with a fluorescent protein and one of its ligands labeled with a label consisting:

- a molecule which is capable of absorbing the light emitted by the fluorescent protein,

- or a fluorescent substance,

this fluorescent protein being chosen from the fluorescent proteins obtained or derived from autofluorescent proteins of cnidarians, the molecular extinction coefficient of which is greater than about 14,000 $M^{-1}cm^{-1}$ and the quantic fluorescence yield of which is greater than about 0.38, this protein being further chosen from green fluorescent protein (GFP), variants of GFP that conserve the fluorescence property, and fragments of GFP and said variants, that conserve the fluorescence property and its ligand labeled with a fluorescent substance, the said kit comprising:

- the target protein fused with a fluorescent protein or a stable cell line which is capable of expressing the protein fused with a fluorescent protein or a plasmid containing the nucleic acid sequence coding for the said targets protein fused with a fluorescent protein as defined above,

- the ligand labeled with the above-mentioned label,

- buffers and media required for the energy transfer between said protein and said ligand.--

Amend claim 33 as follows:

--33. (amended) Kit or equipment for detecting and quantifying non-covalent interactions between a target protein

labeled with a fluorescent protein (No 1) and one of its ligands labeled with a fluorescent substance corresponding to a fluorescent protein (No 2), the fluorescent protein (No 1) being chosen from the fluorescent protein EYFP or EGFP and the ligand being labeled with a fluorescent protein (No 2) ECFP, or the fluorescent protein (No 1) being ECFP and the ligand being labeled with the fluorescent protein (No 2) EYFP or EGFP, the said kit comprising:

- a plasmid containing a nucleic acid sequence coding for the target protein fused with a fluorescent protein (No 1), and a plasmid containing a nucleic acid sequence coding for the ligand fused with a fluorescent protein (No 2), or a ligand fused with a fluorescent protein (No 2), obtained via a recombinant route and purified, or;

- a stable cell line which is capable of expressing the target protein fused with a fluorescent protein (No 1), and a stable cell line which is capable of expressing the ligand fused with a fluorescent protein (No 2) or a ligand fused with a fluorescent protein (No 2), obtained via a recombinant route and purified, and

- buffers and media required for the energy transfer between the above-mentioned protein and the above-mentioned ligand.--

Amend claim 34 as follows:

--34. (amended) Kit or equipment for detecting and quantifying non-covalent interactions between a target protein consisting of a receptor coupled to the G protein labeled with

a fluorescent protein (No 1) and the G protein labeled with a fluorescent substance corresponding to a fluorescent protein (No 2), the fluorescent protein (No 1) being chosen from the fluorescent protein EYFP or EGFP and the G protein being labeled with the fluorescent protein (No 2) ECFP or the fluorescent protein (No 1) being ECFP and the G protein being labeled with the fluorescent protein (No 2) EYFP or EGFP, the said kit comprising:

- a plasmid containing a nucleic acid sequence coding for the receptor fused with a fluorescent protein (No 1), and a plasmid containing a nucleic acid sequence coding for the G protein fused with a fluorescent protein (No 2), or the G protein fused with a fluorescent protein (No 2), obtained via a recombinant route and purified; or

- a stable cell line which is capable of expressing the receptor fused with a fluorescent protein (No 1), and a stable cell line which is capable of expressing the G protein fused with a fluorescent protein (No 2), or the G protein fused with a fluorescent protein (No 2), obtained via a recombinant route and purified; and

- buffers and media required for the energy transfer between the above-mentioned receptor and the above-mentioned G protein.--

Add the following new claim:

--35. (new) Process for detecting and quantifying non-covalent interactions between a target protein and one of its ligand, characterized in that:

- a fluorescent protein fused with a target protein, the protein-ligand interaction of which it is desired to determine, is prepared, the fusion between the fluorescent protein and said target protein being such that the interaction between the target protein, in particular the receptor, and the ligand is not modified, and the response transduction function is not modified, the fluorescent protein being chosen from the fluorescent proteins obtained or derived from autofluorescent proteins of cnidarians, the molecular extinction coefficient of which is greater than about 14,000 $M^{-1}cm^{-1}$ and the quantic fluorescence yield of which is greater than about 0.38, this protein being further chosen from green fluorescent protein (GFP), variants of GFP that conserve the fluorescence property, and fragments of GFP and of said variants that conserve the fluorescence property,

- said fluorescent protein fused with the target protein is placed in contact with a ligand of the above-mentioned protein, this ligand being labeled with a label comprising a molecule which is capable of absorbing the light emitted by the fluorescent protein, or a fluorescent substance, the fluorescent protein being a fluorescence energy donor and the label being a fluorescence energy acceptor, or the fluorescent protein being a fluorescence energy acceptor and the label being a fluorescent substance which is a fluorescence energy donor, and

- irradiation is carried out at a wavelength which makes it possible either to excite the fluorescent protein or to excite the fluorescent substance,

- it being possible for the above-mentioned steps of placing in contact and irradiation to be carried out either simultaneously or one after the other, or

- said fluorescent protein fused with the target protein is placed in contact with a ligand for the above-mentioned protein, this ligand being labeled with a label comprising a molecule which is capable of absorbing the light emitted by the fluorescent protein, or a fluorescent substance, the fluorescent protein fused with the target protein or the ligand having been irradiated before being placed in contact,

- wherein a reduction in the amplitude of the donor's emission and or an emission signal characteristic of the acceptor's emission is detected.--

R E M A R K S

This application has been amended as needed, so as to place this application in condition for allowance at the time of the next Official Action.

In response to the observations made in connection with the election/restriction requirements, as set forth at Items 1-3 of the Official Action, the non-elected claims 1-9, 22-26, and 29-31 are cancelled herewith, without prejudice toward their possible presentation in a divisional application.